ARPAS Symposium: Current and Future On-Farm Auditing & Assessment

719 Animal welfare assessment and auditing. S. E. Curtis*, *University of Illinois*, *Urbana*.

The assessment and the auditing of animal welfare are related but distinct processes. An assessment protocol prescribes how the assessment will be accomplished in terms of indicators of animal state of being and their measurable goals. The auditing process aims to determine whether or not those goals have been achieved. Of course, an auditor must first assess, following the assessment protocol, to be able to determine that. The auditing process is the topic of another presentation in this symposium. Here the focus will be on the rational development of an assessment protocol. Several preliminary decisions have to be made as an approach to establishing an assessment protocol is set. In this author's opinion, the following guidelines should be followed: (1) The concept of animal welfare should be followed, not animal rights; (2) Objective criteria of evaluation should be employed, not subjective criteria; (3) An approach based on animal performance, not animal feelings, is favored; (4) The performance axiom, not the feelings axiom, is favored; (5) Animal-performance standards, not environmental-design standards, should rule; (6) Different goals for assessment —e. g., inter-herd comparison or intra-herd improvement—dictate different approaches; (7) Theoretical constructs often will still serve better than intuition (often flawed) or empirical data (not enough at hand); (8) Respective evaluation criteria should be subjected to weighting schemes as the final composite index of state of being is formulated (although developing such strategies is proving to be a difficult task); and (9) the mixed model of motivation should serve as the guide when developing a variable-weighting scheme.

Key Words: Assessing Animal Welfare

720 Auditing and assessing nutrient management for water quality. A. L. Sutton*, *Purdue University*, *West Lafayette, IN*.

Concentrated animal feeding operations (CAFO) and many mid-sized animal feeding operations (AFO) are required to comply with state and federal environmental regulations specifically related to the protection of water quality. Most current regulations are based on the need to account for and control nutrient flow on-farm to minimize buildup, leaching and runoff of nutrients that may pose a risk to surface and ground water quality. In addition, there is pressure for producers to control pathogens, antibiotics, hormones and endocrine disruptors in the waste stream, soils and water. Attempts to encourage best management practices to control nutrient flow include the requirements for nutrient management plans, comprehensive nutrient management plans, conservation practice plans, storm water pollution prevention plans, chemical and fuel handling, animal mortality management, and emergency action plans. The overall goal of the nutrient management plan on a livestock and poultry farm is to sustain as much as possible a whole farm nutrient mass balance while producing animal products efficiently and profitably. An extensive auditing and assessment program evaluates the status of nutrient management on-farm and develops an action plan specific for CAFO and AFO to minimize water pollution and sustain water quality standards. An annual audit and review checks the performance of the CAFO and AFO on environmental stewardship and identifies areas needing improvement. Critical control points that need to be audited and assessed for each farm are 1) nutrients imported on-farm, 2) nutrients exported off-farm, 3) nutrient status of soils and water, 4) manure handling and storage facilities, 5) conservation practices, 6) runoff waste water control, 7) land application practices, 8) animal mortality practices, 9) record keeping system, 10) operation and maintenance plan, and 11) alternative treatment systems, if applicable. Professionals involved currently and in the future that audit and assess nutrient management on-farm will be discussed including the role of animal scientists in this process.

Key Words: Nutrient Mass Balance, Animal Feeding Operations

721 Auditing and assessing nutrient management for air quality. N. A. Cole*[1], R. W. Todd[1], B. Auvermann[2], and D. B. Parker[3], [1]*USDA-ARS-CPRL*, *Bushland, TX*, [2]*Texas Agricultural Experiment Station*, *Amarillo*, [3]*West Texas A&M University*, *Canyon*.

The potential adverse effects of concentrated animal feeding operations (CAFO) on the environment are a growing concern. The air quality concerns of CAFO vary with the location, type of operation, and other factors. In general, those of most concern include ammonia, hydrogen sulfide, particulate matter (PM), volatile organic compounds (VOC), green house gases (GHG), and odors/odorants. Some states have initiated their own air quality regulations, in part because only PM and VOC are regulated under the Clean Air Act. However, in the future, ammonia and hydrogen sulfide may be regulated under the Superfund (CERCLA) and(or) "Right-to-Know" (EPCRA) Acts. The U.S. EPA and poultry, swine, and dairy industries recently agreed to the National Air Emissions Monitoring Study (Consent Agreement) to fund research on emissions of ammonia, hydrogen sulfide, PM, and VOC from U.S. production farms. Air quality regulations may be based on actual emissions, atmospheric concentrations, human perception (odors) or via limiting the size or location of CAFO. Measuring the concentrations or emissions of most air pollutants is expensive, complex, and labor intensive. Because of large spatial and temporal variability, concentrations and emissions must be measured continuously over an extended period of time. Because different methods/models can give widely varying results with the same data set, it is preferable to use a multitude of methods simultaneously and a mass balance should be run to assure emissions estimates are plausible. In the future, requirements for monitoring of air emissions from CAFO will probably vary from state to state and among different types of operations. Most likely, producers, and not the government, will be responsible for the costs of any air quality monitoring program. Processed-based and empirical models need to be developed so that emissions and(or) concentrations of air pollutants can be estimated from readily obtainable diet, animal, facility, and environmental variables. Auditors will need to be trained in a variety of disciplines including animal sciences, chemistry, engineering, micrometeorology, instrumentation, mathematical modeling, and logic.

Key Words: Air Quality, Regulation, CAFO

722 Training and certification of animal auditors. A. K. Baysinger*, *Farmland Foods*, *Bruning, NE*.

Animal auditing as a profession is in its infancy. Oversight of a profession that can and will have a significant impact to animal agriculture was the motivation to create the Professional Animal Auditor Certification Organization (PAACO). PAACO is an organization of